

NEW SPECIES FROM SOUTH AMERICA. III.

Donald R. Simpson

This is the third and last paper of this series. The second paper of this series* presented descriptions of eight new species of trees and shrubs. In that paper I referred to two publications (Bentham, 1874; Macbride, 1943)** in the discussion under Inga toca-cheana (p. 312) but neglected to include the bibliographic citations; these are given in the second footnote below.

Many of the new taxa described in the three papers of this series are based on collections of a dendrology study project which deserves brief mention here. Most of the project's collections were made by foresters of the Peruvian Forest Service. The project's final report*** can be consulted for the formation and realization. Identification of most of the project's collections was by Dr. Frances Kukachka at the U. S. Forest

* Simpson, Donald R. 1975. New Species from South America. II. *Phytologia* 30 (5): 304 - 316.

** Bentham, George. 1874. Revision of the Suborder Mimoseae. *Trans. Linn. Soc. London* 30: 335 - 664 (under Inga diadema, p. 604): see also Bentham, G. 1876. *Leguminosae III. Mimoseae*, in *Mart. Fl. Bras.* 15 (pt. 2): 468.

Macbride, J. F. 1943. *Flora of Peru, Leguminosae*, in *Field Mus. Nat. Hist., Bot. Ser.* 13, pt. III, no. 1: 3 - 507 (under Inga tarapotensis, p. 43).

*** Ministerio de Agric, Servicio Forestal y de Caza: U. S. Dept. of Agric., Agric. Research Service. *Identification of Trees of Peru, Final Report.* 1966.

Service Wood Products Laboratory, Madison, Wisconsin, and by Dr. Louis O. Williams and myself at Field Museum of Natural History in Chicago. The collections were made in the Amazonian forests of eastern Peru and the forests in the Dept. of Tumbes in northwestern Peru. The project's collections vary considerably in quality, but all are of special botanical interest. This is due in part to the paucity of collections in herbaria from mature trees of the tropical forest canopy. This scarcity of collected materials is a consequence of the great difficulty of making collections from the forest canopy. The usual method of cutting the tree down to obtain a collection limits collectors to only a few such collections a day. Consequently our knowledge of the tree species composing the forest canopy is less complete than for the species of shrubs, herbs, lianas, and understory trees of the same forest. It is not surprising then, to encounter among the collections of this dendrology project such a large number of taxa new to science.

Part of the special quality of this material results from the method of collection. This involved selection of a large tree in the forest and numbering the tree with paint to facilitate relocation at regular intervals. The trees were checked regularly and when in flower a collection was made using tree climbing apparatus and leaving the tree in place undisturbed. Then, when the fruits had matured a second collection was made, and finally the tree was felled and samples of the wood were cut from the trunk. Thus from the same tree wood samples and collections of flowering and fruiting materials were obtained and although bearing different collection numbers they bear the same tree identification number.

The collections of Jose Schunke V. belong not to the dendrology project discussed above but to a project of general collection in the Peruvian forests. This project was funded by a grant from the National Science Foundation and involved the cooperative help of the Peruvian Forest Service. This project began about October or November, 1966, and continued until about 1972 or 1973.

An unusually fine set of collections were made several years ago in Dept. Antiochia, Colombia by Dr. Djaja Doel Soejarto. I was privileged to work on identification of the Rubiaceae in that material and found that among them was a distinctive new species of tree belonging to the genus Duroia which I am describing below.

ANNONACEAE

GUATTERIOPSIS RAMIFLORA D. Simp. sp. nov.

Arbor 10-12 m. alta; diametro trunci 9 pollices; ramulis glabris vel sparsissime minuteque strigosis, in siccitate nigrescentibus vel atrorufescentibus. Folia simplex, alternae, estipulata; lamina plerumque late obovata aliquandam late elliptica, apice rotundato vel latissime acuto, base late cuneata et in petiolum decurrenti, supra glabra, subtus per totam paginam sparse strigosa, plerumque 18-26 cm. longa, 10-14 cm. lata, nervis lateralis 18-22 paribus; petiolo supra late canaliculata, subtus rotundata et 2.5-3.5 cm. longo. Planta ramiflora, i.e., floribus binis usque quaternis ad nodos (defoliatinis?) vel in axillis foliorum veterum fasciculatis; pedicellis 2.5-

4 cm. longis, sparse strigosis. Flos magna; sepalo ovato vel elliptico 6-8 mm. lato, 7-10 mm. longo, extus a pilis longis adpressisque dense piloso, intus dense cortique villosis; petalis in statu plene expanso oblongis vel oblanceolato-oblongis, apice rotundato vel parum retuso, 12-20 mm. latis, 25-40 mm. longis, in alabastro a pilis aureis vel luteolis densissime villosis vel tomentosis, ad maturitatem sparce pubescentibus; conectivo antherarum parum umbonato, praeter papillas minutas glabro; stigmatibus tomentosis; ovario piloso. Fructus ignotus.

PERU: Dept. San Martin: Prov. Mariscal Caceres; Dist. Tocache Nuevo; en bosque alto, Quebrada de Ishichimi (Fundo Retiro), Jose Schunke V. 3924 (Type, F, holotype sheet no. 1,753,293; isotype sheets 1,753,292 and 1,753,294).

Of the four species of Guatterioopsis recognized by Fries (Hort. Berg. 12: 108-112. 1934; 12: 275. 1937), only one, G. sessiliflora (Benth.) R. E. Fries, is known from Peru. In addition to the one Peruvian collection cited by Fries (Killip & Smith 27,522), many collections of G. sessiliflora now in the herbarium show it to be relatively common.

The present species differs markedly from the other species of the genus in the unusually broad, obovate leaves with a broadly acute apex, the long pedicels, and the petals that at maturity are about 1.5 cm. wide by 3-4 cm. long. In contrast, G. sessiliflora has more narrow, oblong leaves with acuminate tips, flowers sessile or very short-pedicellate, and the petals deltoid or ovate in bud, becoming broadly ovate-elliptic to elliptic, usually only about 2 cm. long, and with an acute apex.

MALMEA PACHITEAE D. Simp. sp. nov.

Frutex 2-3 m. altus. Folia parva; laminis chartaceis, oblongis, apice late acuto et saepe in breve acumen productum, basibus late acutis, plerumque 7-11 cm. longis, 2.2-3.5 cm. latis; petiolis plerumque 2-5 mm. longis. Flos folium oppositus singuli portatus; pedicello strigoso, articulato, bibracteato; bracteis, quarum una articulum subtenens, altera supra articulum affixa est, ca. 1-1.5 mm. longis, ca. 1.5 mm. latis; sepalis tribus, ovato-deltaideis, late acutis, ca. 3 mm. longis, 3.5-4.0 mm. latis, extus dense strigosis; petalis sex, extus sparse strigosis intus glabris, illis externis ovatis, 11-16 mm. longis, 10-14 mm. latis, illis internis late ellipticis, 14-22 mm. longis, ca. 11-20 mm. latis; staminibus numerosis, connectivo in discum spicalem ampliato, glabris vel subglabris; ovariis pilosis, stigmatibus glabra. Fructus ignotus. PERU: Dept. Huanuco: Prov. Pachitea; Dist. Honorita; en bosque alto, camino a Ayamiria, cerca del campamento Miel de Abeja a la orilla del Rio Pachitea (ca. 1 km. arriba de Tournavista), Bosque Nacional de Iparia, alt. 300-400 m., 1 dec. 1966, J. Schunke V. 1294 (Type, F: holotype sheet 1,733,810; isotype sheet 1,733,809).

The other Malmea species known from the Rio Pachitea drainage, M. raimondii (Diels) R. E. Fries, has much larger, nearly coriaceous leaves and much larger flowers than in M. pachiteae. Of all the species known from the western part of the Amazon Basin, M. pachiteae most resembles M. dichina R. E. Fries, based on Krukoff 5632 from Acre Territory, Brazil. In M. dichina the tertiary venation is very prominent on the leaves beneath, the blades usually broadest below midlength (i.e., lance-elliptic), apex tapering into a long acumen; length-width ratio of petals mostly

2:1, elliptic or lance-elliptic. In M. pachiteae the tertiary venation is very obscure beneath, the blades generally broadest about midlength, apex broadly acute and the acumen very short or lacking, the outer 3 petals with a length-width ratio about 1.2:1.

BOMBACACEAE

PHRAGMOTHECA LEUCOFLORA D. Simp. sp. nov.

Arbor ca. 20 m. (66 ped.) alta; diametro trunci 20 pollices; diametro prope apicem ramulorum 6-8 mm.; ramulis juvenilis a squamis stellato-peltatis ferrugineis dense vestitis. Folia simplicia, alterna; laminis integris, ovatis, apice obtuso vel late acuto, mucronato vel in apiculum terminenti, basi cordata, lobis rotundatis et marginibus interioribus petiolum superimpositis, coriaceis, supra sparsissime stellatolepidotis praeter secus nervos dense lepidotis, subtus dense lepidotis, e basi 9-11-nervatis, nervis supra parum impressis, subtus valde prominentibus, rete venulorum supra parum impressis, subtus valde prominentibus, rete venulorum supra obscuro subtus manifesto ac parum prominenti; petiolis teretibus, ad basim et apicem parum dilatatis, dense lepidotis, plerumque 8-12 cm. longis, diametro ca. 3 mm.; stipulis prominentibus lanceolatis acuminatis, in superficiebus ambabus dense lepidotis, 16-26 mm. longis, 5-8 mm. latis. Flores ad nodos folia oppositi singuli prodientes; pedunculo dense lepidoto, 20-25 mm. longo, circa 1/3 longitudinem a duabus (raro uno) bracteis et ca. 2/3 longitudinem a una bractea ornato, bracteis lineari-lanceolatis; calyce coriaceo, anguste campanulato, intus a pilis longis adpressis aureis densissime sericeo, plerumque trilobato, 40-50 mm. longo (lobis inclusis);

lobis calyculum late acutis vel obtusis, plerumque longioribus quam latioribus, 10-15 mm. longis et 12-20 mm. latis; petalis 5, oblanceolatis, apice (obtusos?), usque ad 70 mm. longis, prope apicem ca. 20 mm. latis, a pilis stellatis adpressis pubescentibus; tubo filamentorum calyculum a 15-22 mm. excedenti, longe retrorseque sericeo, lobis 5 plerumque 25-30 mm. longis, in quoque lobo duas series longitudinales cellularum antherarum portato, cellulis inferioris discretis, superioribus saepe connatis, indistincte multilocularis. Capsulae ellipsoidales, ca. 5 cm. longae, diametro 3 cm.; basi in calyculum perdurentem coriaceum inclusa; ex apice in 8-12 valvas dehiscentibus; nuculis 5, exterioribus fibrosis, semine uno in quoque nucula.

PERU: Dept. Loreto: Prov. Maynas; Dist. Alto Nanay, 150 m. alt., Peruvian Forest Serv. Dendrology Project tree no. I-148: flowering collection 28 Oct., 1964, A. Gutierrez R. 179 (holotype F, sheet no. 1,753,296); fruiting collection 18 Sept., 1963, A. Arostegui V. 128 (paratype F, bulk fruit specimen).

This genus created in 1946* by Cuatrecasas contains, in addition to the Peruvian species described above, only two other species, both from the Pacific

* Cuatrecasas, Jose. 1946. Notas a la Flora de Colombia, VII. Rev. Acad. Colomb. Cien. Ex. Fis. y Nat., 6(24):533-551. March 31, 1946 (Phragmothea gen. nov., p. 549; through printing error the name of the type species was omitted).

_____ 1946. Notas a la Flora de Colombia, IX. Rev. Acad. Colomb. Cien. Ex. Fis. y Nat., 7(25/26):47-52. Dec. 30, 1946 (Phragmothea gen. nov. p. 49; corrected the omission in previous publication by repeating generic and specific descriptions and naming type species P. siderosa Cuatr.).

coastal forests of Colombia. The three species can be separated as follows.

- A. Leaf blades markedly cordate based, basally 9-11 nerved; stipule 16-26 mm. long; flowering peduncle 20-25 mm. long; capsule ca. 5 cm. long, 3 cm. diameter; western Amazon Basin
 ----- P. flaviflora
- AA. Leaf blades rounded or slightly cordate at base, basal nerves 3; stipule unknown; flowering peduncle ca. 15 mm. long; capsule unknown; Pacific Coast lowlands of Dept. del Valle, Colombia ----- P. siderosa
- AAA. Leaf blades obtuse or rounded at base, basal nerves 5; stipule ca. 1 cm. long; fruiting peduncle 3.5 cm. long; capsule ca. 8 cm. long, 10 cm. diameter; Pacific Coast lowlands of Dept. El Choco, Colombia ___ P. fuchsii

The original description of P. fuchsii by Cuatrecasas (1971)* was accompanied by a discussion contrasting it with the previously published P. siderosa. In that discussion other differences which are not incorporated in the key above were also mentioned.

RUBIACEAE

DUROIA SOEJARTOI D. Simp. sp. nov.

Arbor magna; ramulis juvenilibus crassis quadrangularibus, et versus apicem dense hirsutus vel velutinis, mox glabratis. Folia simplicia, opposita; stipulis terminalibus extus dense hirsutis intus glabris connatis

* Cuatrecasas, Jose. 1971. Miscellaneous notes on neotropical flora. Phytologia 20(8):465-481. Jan., 1971 (Phragmothea fuchsii Cuatr. sp. nov. pp. 472-3).

caducis 1.7-2.5 cm. longis; laminis magnis, late ellipticis, apice acuto cuspidato, acumine ca. 1 cm. longo, ad basim acutis et in petiolo corte decurrentibus, coreaceis vel subcoreaceis, supra subnitidis costa nervisque dense hirsutis ceterum sparsissime hirsutis, subtus costa nervisque dense hirsutis ceterum hirsutis, costa nervisque supra impressis subtus prominentibus, nervis 15-20 paribus, venulis tertiariis subtus prominentibus scalariformibus. Inflorescentiae masculae terminales sessiles trichotomae corymbiformes; ramulis pedicellisque dense hirsutis; ramis primariis 2.5-5 cm. longis, secundariis plerumque minus quam 1 cm. longis; pedicelis 2-7 mm. longis. Flores ca. 15-20 in quoque inflorescentia; calyce extus et intus dense adpresse pubescenti praeter versus marginem sparse pubescenti cylindrico subtruncato inconspicuo dentato longitudinaliter inconspicuo 6-costato 8-10 mm. longo diametro 5-6 mm.; corolla alba salveriforma 6-lobata ad maturitate ca. 30-38 mm. longa, tubo 17-20 mm. longo diametro ca. 5-6 mm. cylindrico, prope basin angustata, extus a pilis retrorsis adpressisque dense sericeo praeter in 2 mm. basali glabro, intus glabro praeter retrorse barbato ca. $\frac{1}{4}$ supra basin, lobis oblongis late acutis 15-17 mm. longis 6-7 mm. latis extus sericeis a pilis antrorsis intus tomentosis a pilis minimis adpressis antrorsis; staminibus 6, inclusis; filamentis a tubo corollae adnatis per totam longitudinem; connectivo antheram excedenti, ad apicem acuto vel acuminato, ad basim truncato vel retuso; antheris dorsifixis linearis ca. 10 mm. longis, in corollam ca. 15 mm. supra basim et ca. 3 mm. supra basim antherae affixis; stilo 14 mm. longo late lineari vel anguste elliptico acuto complanato glabro. Flores feminei ignoti. Fructus sessilis ovoido-oblongus ca. 8-10 cm. longus diametro ca. 5-7 cm. dense hirsutus

a pilis rubris vel ferrugineis; exocarpio in siccitate fibroso subligneo; seminibus multis.

COLOMBIA: Dept. Antioquia: deep primary forest on steep mountain side along Rio Anori 5 km. from Providencia. Valle del Rio Anori entre Dos Bocas y Anori. Zona transicional entre bosque humedo y muy humedo tropical montanoso, alt. 400-900m., 24-31 Mayo, 1973, Djaja D. Soejarto 4089 (holotype F, no. 1,788,505). Dept. del Valle: Rio Colima (region del Choco), La Trojita, 5-50 m. alt., 19 Feb.-10 Mar., 1944, J. Cuatrecasas 16,588 (paratype F, no. 1,166,908); costa del Pacifico, Rio Cajambre, Barco, 5-80 m. alt., 21-30 Abril, 1944, J. Cuatrecasas 17,144 (F); Bajo Calima, Junio 28, 1961, Isidoro Cabrera 575 (F).

The two Cuatrecasas collections were previously determined as D. hirsuta (P. & E.) Schum., and are probably to be found filed under that name in most herbaria. Except in having hirsute pubescence on the branchlets, petioles and fruits this species does not resemble D. hirsuta. It's probable relationships are with D. amapana Steyerm., D. aquatica (Aubl.) Brem., and perhaps D. eriopila L.f.

ELAEOGEEA ARBOREA D. Simp. sp. nov.

Arbor ca. 17m. alta, diametro trunci 21 pollices; ramulis valde 4-porcatis inter porcas profunde sulcatis glabris vel in ramuli juniores minute tomentosus. Folia opposita sessilia vel subsessilia; vagina stipulae ca. 7 mm. longa truncata, ad matritatem plerumque basim versus fidenti, in sicco resinosissima intra vaginam, margine incrassato revolutoque; lamina orbiculari, oblongo-orbiculari vel interdum obovata, apice late obtuso rotundato vel raro subemarginato, basi plerumque late obtusa raro rotundata vel truncata,

in sicco supra nitida subtus hebeti, costa utrinque pilosa, nervis subtus pilosis, ceterum glabra. Inflorescentia paniculata pyramidali vel late ovoidea vel ellipsoidalis ubique tomentosa; pedunculo plerumque 5-8 cm. longo in sectione transversalis compresso-quadrangulato ut in rhombo transverso; ramis primariis oppositis plerumque 4-6 paribus, ramis secundariis oppositis vel alternis; omnibus ramis a bracteis ovatis, lanceolatis vel linearibus, acuminatis subtentis; bracteis par infimum ramorum primariorum subtenentibus late ovatis vel deltoideis acuminatis plerumque 4-7 mm. longis nonnumquam ampliatis foliiformibusque, bractea pedicellum subtenenti deminutissima plerumque 0.5-1 mm. longa. Flos extus pedicellusque glabrus vel pedicellus inferne tomentosus; pedicello 0.3-2 mm. longo; calyce extus et intus glabro truncato, parte libero ca. 0.7 mm. longo; corolla late campanulata 5-lobata extus et intus praeter fauce dense barbata glabra, tubo ca. 0.8-1 mm. longo, aestivatione loborum contorta sinistrorsa externe visa, lobis per anthesin reflexis; staminibus 5, lobis corollae alternantibus in tubo corollae sub sinibus insertis, filamentis ca. 2 mm. longis ad infimum barbatis ceterum glabratis, anthera submedialiter dorsifixa glabra ca. 1.2 mm. longa longitudinaliter dehiscentia; stylo glabro ca. 3.2 mm. longo in dimidio distale bifido; stigmate in pagina interiora ramulorum styli. Capsula matura glabra biloculare, placentatione axiali; seminibus numerosis tenuibus margine alato incluso ca. 1 mm. longis et 0.5-1 mm. latis.

PERU: Dept. Pasco: Prov. Oxapampa; Dist. Oxapampa; bosque humedo - montano bajo,* La Felicidad,

* This is the name of one of the "life zones" in the Holdridge system as applied by Tosi in "Zonas de Vida

2,300 m. alt., Peruvian Forest Service Dendrology Project Tree no. OX-113 (flowering collection, 13/VI/1968, Eduardo Vasquez A. 152, holotype F, no. 1,753,295; fruiting collection, 3/IX/1968, Eduardo Vasquez A. 182, paratype F, no. 1,753,291).

RUTACEAE

ZANTHOXYLOM ALBUQUERQUEI D. Simp. sp. nov.

Arbol ca. 21m. alta, diametro trunci ca. 48 cm. (19 polices); ramulis crassis plerumque a zonis internodiorum condensatorum praeditis, cortice longistrorsum porcato (interdum obscure porcato), ramulis junioribus dense velutinis a pilis in sicco rufescentibus vel cinnamomeis. Folia decidua hysterantha vel coetanea alterna paripinnata praeter foliola matura supra sparse velutina omnino dense velutina; petiolo tereti, plerumque 3-5 cm. longo; rachide prope basim tereti cetera lateraliter compresso (14) 30-35 cm. longo; foliolis 7-8 paribus sessilis pellucido-punctatis subcoriaceis vel chartaceis base truncatis atque parum obliquis, oblongis vel obovato-oblongis, apice late acutis vel obtusis (6) 10-12 (14) cm. longis (3.5) 4.5-6 (7) cm. latis, nervis quoque latere 15-18 sub angulo lato e costa divergentibus marginem versus arcuatis atque ad nervum proxime superiorem conjunctis, costa venisque supra parum impressis subtus prominentibus, rete supra vix vel haud visibili subtus nunc leviter nunc manifeste visibili. Inflorentiae in axillis foliorum summorum prodientes paniculatae praeter flores fructusque omnino dense velutinae, in statu florenti 10-12 (14) cm. longae

Natural en el Peru." (See Instituto Interamericano de Ciencias Agricolas de la OEA, Zona Andina, Boletin Tecnico No. 5.)

et 6-8 cm. latae, in statu fructificantes 10-16 cm. longae et 8-12 cm. latae. Flores feminei subsessiles pentameri; sepalis triangulari-ovatis apice acutis praeter marginem ciliatum glabris vel sparse pubescentibus ca. 0.6 mm. longis; petalis praeter aliquot pilos in pagina dorsali dispersos glabris ellipticis apice acutis plerumque 2.5 mm. longis et 1.2-1.5 mm. latis; staminibus carentibus; disco ca. 0.3 mm. alto; pistillo 5-loculari subgloboso diametro ca. 1.5 mm., stylo 0.3-0.4 mm. longo, stigmatate peltato ca. 1.2 mm. lato. Fructus sessilis 5-loculares sed interdum ex abortu minus; cocco (in specimine typico verosimiliter submaturo) ca. 4 mm. longo et 3 mm. lato extus glanduloso-punctato glabro sed secus lineam dehiscentiae a pilis microscopicis sparse puberulo.

PERU: Dept. Loreto: Prov. Coronel Portillo; Dist. Calleria; Vivero del Region Forestal (Peruvian Forest Service Regional Tree Nursery), 4 km. de Pucallpa, alt. ca. 130 m., Peruvian Forest Service Dendrology Project tree no. PA-14 (flowering collection, June 27, 1968, Manuel Castillo S. 16, paratype F, no. 1,766,990; fruiting collection, Aug. 1, 1968, Manuel Castillo S. 28, holotype F, no. 1,766,987).

Notable among species of the western Amazon Basin for the very dense pubescence, deciduous leaves, sessile leaflets, leaflet base truncate and slightly oblique, pistil 5-carpellate and the fruit 5-coccic.

Another species with pubescence of simple unbranched hairs is found in eastern Brazil. This is Z. cinereum Engler, based on a type (Warming s. n.) from Lagoa Santa, Minas Geraes State, Brazil (photo ex B: F neg. 12,434). I have not seen any material of the type collection of this species but a topotype (A. P. Duarte 9615, Jard. Bot. Rio de Jan. no. 130,656) from Lagoa Santa is represented in the Field Museum herbarium

and matches the photograph of the type. The pubescence is much less dense than in Z. albuquerquei, the leaflets have a distinct petiolule ca. 3-7 mm. long, and the pistil is 3-carpellary (based on rudimentary pistils in staminate flowers). Another collection of Z. cinereum in herb. F, is E. P. Heringer 4082 (herb. Bradeanum no. 32,990) "leg. 6. 6. 55, in Horto Florestal de Paraopeba," Minas Geraes State, Brazil. It has more coriaceous leaflets than in the Duarte collection and the pistillate flowers have 3-carpelled pistils.

ZANTHOXYLUM SOBREVIELAE D. Simp. sp. nov.

Arbor ca. 22 m. alta, diametro trunci 16 pollices (ca. 40.5 cm.); ramulis longistrorsum striatis; ramulis juniores, foliis, inflorescentiisque stellato-pubescentibus. Folia paripinnata, alterna, 22-35 cm. longa; petiolo rhachidique supra non profunde sulcata subtus convexa sparse vel dense pubescenti; petiolo plerumque 5-7 cm. longo; rhachide plerumque 15-20 cm. longa; foliolis 6-8 paribus sessilis vel subsessilis et cum 0.5-1.5 (2) mm. longo petiolulo instructis, oblongis ellipticis vel oblanceolato-oblongis base obliquis obtusis vel rotundatis apice late acutis vel obtusis plerumque cuspidatis, cuspide acuminata 3-8 mm. longa, margo integro, subcoriaceis supra laevibus subnitidis sparsissime stellato-pubescentibus vel glabris subtus uniformiter denseque stellato-pubescentibus, costa supra in sulco angusto impressa subtus valde prominenti, nervis quoque latere 16-20 supra parum impressis subtus prominentibus, reti venularum supra haud manifesto subtus manifesto sed non prominenti. Inflorescentiae apicales vel in axillis foliorum summorum prodientes dense pubescentes a pilis adpressis stellatisque; ramulis a bracteis triangularis 0.5-2 mm. longis subtentibus; pedunculo (1) 3-5 cm. longo; pedicellis 0.5-1

mm. longis a bracteola late triangulari ca. 0.2-0.5 mm. longa subtenentibus. Flores feminei pentameri; lobis sepalorum late ovatis acutis ca. 0.3 mm. longis extus dense stellato-pubescentibus; petalis glabris oblongis acutis ca. 2 mm. longis pallide flavis (fide lectoris); disco ca. 0.2-0.3 mm. longo in parte superiore stellato-pubescenti; pistillo discum coronanti bicarpellato ca. 1.5 mm. longo et 1.3 mm. lato, carpellis confertis, stylis discretis 0.1-0.2 mm. longis, stigmatis coalitis in disco complanato-peltato diametro 0.8 mm. Fructificantia carpelia subglobosa diametro 4-5 mm. glabra, in sicco externe tuberculato-exasperata; semenibus testa nigra nitidaque ornatis.

PERU: Dept. Loreto: Prov. Coronel Portillo; Dist. Calleria; "bosque seco tropical,"* km. 33, carretera Pucallpa a Huanuco, alt. 160 m., Peruvian Forest Service Dendrology Project tree no PA-36 (flowering collection Feb. 8, 1968, Manuel Castillo S. 1, holotype F, no. 1,766,988; fruiting collection May 14, 1968, Manuel Castillo S. 9, paratype F, no. 1,766,989).

BRAZIL: Acre State: Basin of Rio Jurua; upper Rio Jurupary, lat. 8-9° S., long. about 70° W., on terra firma, "tree 80 ft. high," July 15, 1933, Krukoff 5214 (F).

This species would probably "key" in Macbride's Flora of Peru to Z. ruizianum (Kl. ex Engl.) Macbr. Z. sobrevielae differs from Z. ruizianum in having the leaf rachis wingless vs. narrowly margined, the leaflet margin entire vs. crenate, and the leaflets of the former are about twice as large in the latter species.

None of the specimens have spines nor is there mention of such in the collectors field notes so I

* See footnote under Elaeagea arborea.

assume tentatively that the unarmed condition may be characteristic for the species. The stellate pubescence, pentamerous flowers, bicarpellate ovary, and even-pinnate leaves with 6-8 leaflet pairs all suggest a close relationship with Z. ruizianum. In the Flora of Peru, Macbride describes Z. ruizianum as having the young carpels solitary. The specimens he cites, including the fragment from the isotype at MA, all have a bicarpellate pistil. The photograph of the holotype (Field Museum Botany Negative number 12,460) shows opened flowers with pistil exactly matching that of the isotype fragment.

STERCULIACEAE

STERCULIA STIPULIFERA Ducke subsp. *PERUVIANA* D. Simp.
subsp. nov.

Arbor 15-25 m. alta; ramulis crassis, in parte subapicale diametro plerumque 1.5-2.0 cm., apice congeste foliiferis et a stipulis persistentibus imbricatis obtectis. Folia magna; stipulis ovatis vel triangularibus, late acutis vel acute acuminatis, (1) 1.5-2 cm. longis et 1-1.5 cm. latis, subcoriaceis, pagina interiora dense pubescenti et in statu sicco ferruginea; petiolis floccosis deinde glabris, longistrorsum striatis, subtus convexis, supra non profunde canaliculatis, ad apicem basemque tumidis; laminis palmatim 5-nervatis, rigide chartaceis vel subcoreaceis, ovato-oblongis vel oblongo-ellipticis, apice late acuto vel obtuso, base subcordata vel cordata, raro truncata, margine integro, (15) 20-35 (55) cm. longis, (11) 14-25 (52) cm. latis, supra laevibus et in vivo nitidis (fide collectoris) in sicco hebetatis costa atque nervis secundariis manifestis sed

non prominentibus venis tertiariis manifestis parum impressisque, sparse sed uniformiter stellato-pubescentibus mox glabratis, subtus hebetatis costa nervis venisque prominentibus, praeter pubescentiam densiorem breviorumque secus nervos principales sparse pubescentibus a pilis stellatis longe stipitatisque per totam paginam. Inflorescentiae axillares, in quoque ramulo prope apicem plerumque 8-12 prodientes, laxae ramosae, anguste paniculatae, 18-35 cm. longae; rachibus ramulisque dense adpresseque tomentosae; bracteis ovato-ellipticis vel lanceolato-ellipticis, acutis vel acuminatis, coloribus atque pubescentiis eadem in stipulis, quarum grandioris 1.5-2 cm. longis metientibus; floribus staminatis pistillatisque in eadem panícula portatis, illis quam his numerosioribus, his in anthesin illos praecedentibus. Calyx ca. 1.5 cm. longus praeter 2-3 mm. e basi coalitus liber; lobis lineari-lanceolatis acuminatisque extus stellato-tomentosis intus supra appendicem sparse tomentosae vel subglabris, infra appendicem pilis stellatis carentibus pilis simplicibus annulum dense pilosum ca. 2 mm. supra basim formantibus, ceterum sparse pilosis a pilis longis simplicibusque; androphoro gynophoroque ad basim glandulosam pubescentem tumido, illo ad maturitatem ca. 12 mm. longo, antheris 10, hoc ad maturitatem 6-7 mm. longo, sparse glanduloso pubescenti usque 1.5 mm. supra partim tumescentem ceterum glabro; ovario styloque densissime stellato-pubescenti; stigmatibus apicem styli truncati tegenti, obscure 5-lobata, minutissime papilloso. Fructus immaturi; carpelibus extus dense velutino-tomentosis, intus a pilis longis stellatis sparse hispidis, ca. 8 cm. longis, 4 cm. diametro, stipite 1-2 cm. longo; semenibus (in statu immaturo) numerosis.

PERU: Dept. San Martin: Prov. Mariscal Caceres; Dist. Tocache Nuevo; en bosque alto, Quebrada de Tenanta (margen izquierda del Rio Huallaga), 12 junio, 1970, Jose Schunke V. 4041 (F); en bosque alto, terreno humedo, Quebrada de Saule Chico (margen derecha del Rio Huallaga), 7 sept., 1970, Jose Schunke V. 4352 (paratype F, no. 1,769,654; isoparatype F, no. 1,767,297); en bosque alto, camino al caserio de Santa Rosa de Misholla, 4 km. de Puerto Pizana, 7 mayo, 1971, Jose Schunke V. 4869 (holotype F, no. 1,767,298; isotype F, no. 1,767,299).

Collections no. 4041 and 4869 were obtained in flowering stage, no. 4352 has immature fruits. The collector's field notes on flowers and fruits are as follows: J. Schunke V. 4869, "moderate yellowish pink 7.5R8/6, en el interior de la corolla strong red;" J. Schunke V. 4041, "flores rojo violeta, corola verde amarillenta, estigma amarillenta, ovario verde amarillenta;" J. Schunke V. 4352, "frutos inmaduro de color strong yellowish brown."

From subsp. stipulifera, subsp. peruviana differs in the larger leaves with blade 5-nerved from the usually cordate base, the inflorescence bearing both pistillate and staminate flowers, the latter more numerous. In subsp. stipulifera the smaller leaves have blades 1- or 3-nerved from the base, and the inflorescence is unisexual (? - type collection described as having staminate flowers only).

There is another plant which may belong to S. stipulifera subsp. peruviana or may be a related undescribed taxon. It is known to me only from the collections from one tree cited below. It has stipules with the color and pubescence of S. stipulifera but differing in being nearly three times longer, soft

and pliable rather than rigid coriaceous, and apparently not persistent. The leaves are oblanceolate-elliptic or obovate-elliptic and two to three times longer than broad, in texture and pubescence resembling subsp. peruviana, and the base 5-nerved but obtuse or truncate instead of cordate. The inflorescences are immature and still entirely enveloped in the bracts, but some flower buds large enough for dissection demonstrate that there are both pistillate and staminate flowers in the same panicle. A collection of two mature, dehisced fruits were obtained although without seeds. The fruiting carpels are subsessile, ca. 8 cm. long, ca. 4-7 cm. diam. in the plane of dehiscence, the carpel wall rigid, woody, 1.4-1.8 cm. thick, minutely appressed tomentellous without, densely hispid within. This tree is documented by the following two collections. The vernacular name is given as "Huarmi caspi."

PERU: Dept. Loreto: Prov. Maynas; Dist. Indiana: bosque humedo tropical, Varadero Mazan, alt. 130.m., Peruvian Forest Service Dendrology Project tree no. I-107: (branchlet with leaves and immature inflorescences, 18 sept., 1964, Abelardo Gutierrez R. 170 (F); mature fruits, 1 febr., 1963, Antonio Arostegui V. 92 (F).

Varadero is a slipway or sloping riverbank where boats can be pulled out of the water for cleaning or repair. Varadero Mazan is presumably a facility of that type at the village of Mazan on the Rio Mazan a little way above its confluence with the Rio Napo.

The branchlets which are only about 1/3 to 1/2 the diameter of S. stipulifera differ also in having regions of very condensed internodes with closely packed stipule and leaf scars, alternating with regions where the leaf and stipule scars are separated by normally elongated internodes. This phenomenon is

commonly encountered in tropical deciduous tree species, less frequently in tropical evergreen trees (e.g., several species of Buchenavia in the Combretaceae), and is usually associated with markedly seasonal (rather than continuous) production of new leaves. In the stipule-bearing stem tip of this Sterculia the young leaves and young inflorescences are just beginning to emerge from among the stipules. The general aspect of these leaves suggests that they represent the previous year's leaf production. This appearance suggesting a markedly seasonal flush of new leaves is not apparent either in subsp. stipulifera or subsp. peruviana.